The New Displays- In Color!

See Page 5

COMPUTERWORLD
The Newsweekly for the Computer Community

Thinking Of Starting A Business?

See Page 7

Vol. 1 No. 6 CAMBRIDGE, MASSACHUSETTS SEPTEMBER 20, 1967 25 cents

New Pricing Method

Rentals Based On Price-Performance Offered

LOS ANGELES, California, September 13 – The small firm of Standard Computers are pioneering a new equipment pricing technique. Starting with the new year deliveries of the Standard I.C.-6000, they guarantee price performance with the rental rates bases upon the actual through-put of the customer's job-mix. Typically, the firm expects the 7094 emulated performance of the I.C.-6000 to have between 25% and 65% of the performance of the IBM 7094-1 with the I.C.-6000 rental prices ranging from $16,000 to $22,000 depending on the achieved performance! Similarly, the 7044 emulated performance ranges from 35% to 80% of the 7044 with systems rental prices from $14,000 to $17,500. (Original equipment prices are considerably higher.)

Bill Wooley, director of Marketing for Standard Computers, talking to COMPUTERWORLD today, explained that the pricing would be based on a job-mix of some standard tasks selected by the customer. "In general," he said "We will go along with what they se-

CONTINUED ON PAGE 4

"We're Sorry About That, Chief!"

But really, we are sorry. Some of our subscribers have told us of delays in getting their newspaper. They have told us in no uncertain terms. And they were quite right, too. Because there were some sudden delays in mailing out of some of the issues. This has now been handled, and with this issue we no longer anticipate delays in sending you your copy.

We hope that you will forgive us this our first bug.

COMPUTERWORLD

STATE COMPUTERS BACKED BY TEDDY

Sen. Edward M. (Ted) Kennedy (Dem., Mass.) has introduced a bill into the Senate to look into a computer system to help states and cities use federal programs more effectively.

The measure in the form of a joint resolution would give the Advisory Commission on Intergovernmental Relations the job of studying the feasibility of such a system.

The need for the system is in the states' problems in locating the right federal aid program for the particular requirement. Since 1955, federal aid to state and local governments has grown from $3.1 billion to $14.6 billion.

"The very proliferation of federal programs is bewildering," said the senator.

The federal government has 300 programs on education, environment, poverty and community development, which are administered by more than 100 departmental subdivisions at varying organizational levels in 18 different departments and agencies. More than 40 federal programs provide aid for urban development. Four different agencies handle programs for waste disposal. And so on.

Two organizations have done preliminary work in this area already, said Senator Kennedy. A comprehensive survey was done by two Xerox subsidiaries, Basic Systems, Inc. and University Microfilms, Inc.

They have set up a system which can be used by some groups, although it is not as complete as that which the senator envisions. He has discussed the project with a number of firms including Diebold Associates and IBM [illegible] study by IBM would be used by [illegible]tor to determine the "approp[illegible]e [illegible]uts of the system."

Another Independent Disk-Pack Supplier

January Deliveries From Caelus

Caelus Memories-of San Jose, California, told COMPUTERWORLD this week that it intended becoming the leading independent supplier of disk packs. They will offer Instant Delivery to start with and later intend to keep their hold on the market helping the users to distinguish between good and bad disk-packs for such points as durability, drop-out rates, etc. "Naturally, we are very certain that OUR disk packs will be good – very good" said Phillippe Yaconelli, Caelus President, when Computerworld caught up with him between plane flights on a transcontinental tour to set up the initial CAELUS sales force.

Caelus Memories occupied their new $750,000 building at San Jose last week. This building has been designed exclusively for the production of disk-packs, and has a capacity of over 40,000 packs a year. Production for sale is scheduled to start in late fall, and sales themselves to start in January, 1968. The Caelus sales force will be national from the outset, mainly in the major cities and other areas where there is a concentration of disk packs. "Instant Delivery in an industry where back-logs are the rule" was how Mr. Yaconelli explained his confidence that Caelus would be able to find a quick market for the product.

IBM, who hold some of the necessary patent rights, have been highly co-operative in selling CAELUS the necessary licenses; and the CAELUS technical staff includes veterans of RAMAC days onwards. The firm recently changed its name from Janus Research (becsuae of a possibility of name – confusion) to CAELUS – the Greek god of invention.

(Caelus Memories is also featured this week on the financial pages of Computerworld in the article "Thinking of starting up a business?")

Color Displays Arrive

Philco-Ford Introduce 3 Units; Say Price Differential 'Negligable'

Color display units, which can use red, green, blue or yellow as well as white characters or graphics have been announced by Philco-Ford for delivery early next year. The color facility is established by the manufacturer to cost little more than $100 out of the $8000 cost and therefore to be effectively negligible. A prototype system, connected to a GE 235 in Detroit, was displayed at the Houston DPMA meeting this month, and further demonstrations are planned.

There are three major units presently in the product line. The first is the standard D-20, for normal display purposes. A character display, it costs between $7,000 and $8,000 depending on the interface electronics required by the computer systems involved. The second, the D-22, is a multi-channel device with separate memory-protection for each channel. This is specifically for airline flight information systems. The third, Model D-30, has limited graphic capabilities, and is to be used particularly for industrial applications. Further details on the units and possible applications are given on Page 5.

SPACE-PROGRAM SPIN-OFF

The importance of the breakthrough can not yet be estimated. Apparently there is little problem in working with other computer systems. For instance, prototype tie-ups with both IBM 360 systems and GE 235 systems have been reported successful. The basic black-and-white system marketed by Philco-Ford – the D-21 – is said to be a plug-in interchange for the IBM 2260, needing no change in the software at all, and similar performance is expected from the new units so far as the hardware is concerned. A discussion of the problems involved in the software will be found on Page 6. These primarily relate to the alternate ways of coping with the need to transmit the color identification.

The displays are based on color television tubes, and have been developed using the experience gained by Philco-Ford as prime contractor for the astronauts' Mission Control Center in Houston. Here the individual displays are supplemented by large-screen and monitor displays which are familiar to most of the television-viewing audience of the country. The ability to use screens in addition to small personal displays is available with the new units.

DELIVERIES IN SPRING

Deliveries, on an anticipated 120-day schedule, should start early next year

Some possible color applications are described on Page 5, and some possible problems on Page 6.

Control Data Matches IBM Announcement

Graphic Unit On CDC 1700 Unveiled

Following last weeks announcement in COMPUTERWORLD of the new IBM 2250 system which runs with the small 1130 computer. Control Data officially announced its entry into the small computer graphics market.

With a graphical unit very like the IBM one (not shown) Control Data launched their Digigraphics 274 with the 1700. Spokesmen for the company claimed that the advantages of having 4 million words with the two-disc storage area, and the response time characteristics of the system, would leave them in a strong competitive system. (The response time on the new unit on an inquiry with two references to the disc, will be in the 250 millisecond range.)

Static display of graphic data at the console is provided by a buffer memory on an off-line basis. The computer is used only to process bursts of display-change information.

The main features of this system

CONTINUED ON PAGE 4

Control Data Digigraphics 274 on the small scale CDC 1700 system was announced this week.

Computers Are A Danger- Just Like Life

The Committee for Human Rights last week assailed the peril intrinsic in computers. They said that only red tape is holding back the terrors of George Orwell's 1984. BUT – have they thought of the benefits computers can bring to the field of human rights?

No job? A good computer program can locate one that fits you very quickly. Severel perhaps so that you can take your choice. A suspicion of discrimination against you? A program can very soon spot a discrimination pattern. Peyola problems? Beaten down by City Hall? All these very real problems can be tackled by the "dangerous" computers.

We think that computers can make human rights more enjoyable for humans.

We think that they are good – and that the Committee has not seen far enough.

We admit that computers ARE a danger. That they are an invitation to sin.

SO IS LIFE ITSELF!

Now We Can Earn Our Money

With today's news about the Philco-Ford Color Displays the true worth of systems analysts becomes apparent. Let's face it - many of our co-workers think we in deta processing are overpaid, and much of management feels that we set our pay scales through scarcity rather than through ability.

What they miss is that we are paid for facing up to the real world - no matter what that is. We are paid because as we open the post each morning we must be prepared to forget the skills of yesterday – and quickly become experts in the new problems.

Such a case in the Philco-Ford case.

As we mention below - it is a new problem. And a new opportunity.

Hurrah! NOW WE CAN EARN OUR PAY!

Displays Come Into Their Own

With today's news about the color displays - and remembering the story two weeks ago about the three-dimensional displays at Brown University - it is clear that the status of remote displays is rapidly changing. They are beginning to take their own place in the scheme of things – no longer simply a sub-set of the on-line printer or plotter.

For that is frankly what they have been to date. They showed you small parts of items, of plots, of listings. True - they showed it to you quickly - but still they were just a subset.

Now the display can do things the printer and plotter cannot. The two extra bits per character on the display provide us with all sorts of new information – while not taking up any more display room. The applications covered on Page 4 give some of the more obvious possibilities - but many are still unconceived.

So - the displays have matured. They exist as a valuable weapon in the systems analyst's armory. They exist as a problem, too. (What happens to ASCII?) But we can handle problems, can't we?

Welcome to the new displays.

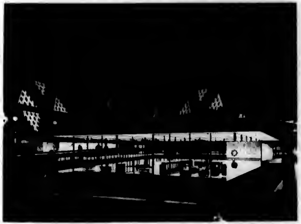
The Bugs Of Expo 67

Expo 67 Is A Shining Success-The Computers Aren't! Why Not?

PART 1 OF 2 PARTS

On the surface, Expo 67 appeared to provide a situation in which everything seemed to be right for the computer. Expo 67 was prepared to live with the times and to do things quickly (it was put together faster than any other fair). No previous systems could trammel the picture and the problems of the analyst-he was able to create entirely new systems around the computer complex-and a real trust of the computer's whole operation pervaded the fair management. Under these circumstances, which might be envied by almost any systems analyst, the computers of Expo seemed destined for spectacular success. BUT THIS DID NOT HAPPEN. Headlines in the newspapers flared, "Computers Can't Count". Irate visitors actually slapped some of the remote terminal operators in the face at their annoyance. Things did not work out. Why not?

Computerworld went to Expo 67 to find the bugs. Here is its report.



EXPO '67 Computers were visualised in Glory BEFORE the Fair ...

3 SYSTEMS

There are three major computer systems involved in the Fair. Logexpo, based on a G.E. 200 system, Reservexpo, on an I.B.M. 360/50 and the Operations System on a G.E. 600.

Logexpo which runs on the G.E. 200, is the system a visitor uses before he gets to the fair, providing a fast and convenient method to find suitable accommodations for his stay. The visitor is asked for such factors as his price, location, length of stay, size of party, and even such special things as pet accommodations and marina dockage. These requirement are then transmitted to the G.E. 225 computer through one of the display terminals. It is estimated that to positively reserve accommodations only a minute of the visitor's time will be required using this up-to-date automated system.

Reservexpo acts as an electronic box office for the twenty-two free pavilion theaters located throughout Expo. Visitors can make reservations for shows at any booth or terminal. The computer will search its list to see if seats are available. If they are, an admission ticket will be printed at the booth and handed to the visitor. Long line-ups at pavilion theaters should be eliminated.

Operation Control was designed to solve operational problems occurring on a day-to-day basis at the exhibition. Visitor counting is handled from strategically located turnstyles at entrances and other key-points on the sides. "Information regarding the flow patterns of thousands of the visitors is relayed to the G.E. 625. Speediness of handling the current situation and forecasting of future conditions allows Expo to take timely action to head off the potential inconvenience and danger of overcrowding."

These, then, were the hopes for the computers. They were high hopes, and seemed justified. They were used in advertising the fair - just as almost anything to do with computers is used as advertising material. After all, computers are right in the public limelight-they are new, they are interesting. This is a fact of computer life that a manager ignores at his peril.

WHAT HAPPENED

What actually happened, to these three systems. What happened, well, Reservexpo has been abandoned, "Logexpo" is under severe criticism, and Operations Control has caused a series of headlines like "Computers Can't Count" -not a very good send-off for the most sophisticated group of computers in Canada.

The problem behind Logexpo turned out to lie in two human interfaces. True, the computer could search out details and find rooms concerned provided they were in hotels. This was done fast, and, when the rooms were available, worked. Unfortunately, sometimes the hotels had not yet been built, or had not been finished - the visitor expected that Logexpo would know this. But, in fact, all that Logexpo knew was that proper approval has been granted by the appropriate authority. Sometimes these approvals were granted long before the rooms were ready - (partly as a result of political pressure.) Camps, as well as hotels, suffered the same problems. One senior officer of the fair estimated that only 50% were really suitable for the campers reception!

In the case of homes, which was the third category that was handled by Logexpo, a different problem arose. Logexpo knew that a room was supposed to be available - but they were often unable to contact the home-owners who were out or otherwise not answering their phones. This added greatly to the length of time a visitor would be kept waiting. And a further point was that the householders frequently forgot that they had "Aunt Minnie" coming down, or that they were going away, or something else. In fact it turned out that not just a few minutes, but many calls and many hours were spent in this area.

The complaints from these two items-inadequate but authorized accommodations, and the long time needed to reserve requested accommodation, added up to general dissatisfaction.

But was the computer to blame? No. Only indirectly. The computer system was doing exactly that which it had been designed to do. HOWEVER, IT WAS NOT DOING WHAT IT HAD BEEN REPRESENTED TO DO - therefore what the press and the public expected it to do. It was not the hardware's fault which was to blame, but the people around the computer can hardly escape some responsibility. The systems analyst, for instance, who had allowed a system to be described as reserving rooms, as opposed to having it said that they located rooms or entries in the official lodging lists, cannot blame people for taking him at his word - or reading into the absence of proper disclaimers the idea that the computer was responsible.

People believed that the computer was responsible.

However, Logexpo was not the worst case. It did at least, continue. Reservexpo was discontinued.

To Be Concluded Next Week

COMPUTERWORLD

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Tidewater Buys 360 Software

Orders Mark IV File Management From Informatics

Tidewater Oil Company of Los Angeles has ordered a Mark IV File Management software system from Informatics Inc. of Sherman Oaks, California. Operating EDP installations in Houston and Philadelphia, Tidewater will use the software system in its IBM System/360 installations.

Mark IV is a general purpose file management system that provides quick response for special reports and other critical one-time requirements, as well as efficient day-to-day operation. A proprietary software package that will produce programs for the IBM System/360, Mark IV will:

- Create files from data on punched cards, magnetic tapes and direct access devices.
- Maintain files by performing changes, additions and other update actions.
- Read a Master File and as many as four related files simultaneously for updating, processing and output.
- Select records from files that contain data which meet specific qualifications.
- Extract data items from the selected records.
- Compute results for use in printed output, subfiles, updating of master files, and in further record qualification and additional computation.
- Arrange output by sorting, sequencing, and grouping.
- Format printed reports containing such elements as Preface, Page Title, Column Headings, Summaries and other details.
- Summarize data to as many levels of totals and subtotals as required.
- Print reports with wide flexibility in format and content on standard computer paper, special size output or pre-printed forms.
- Produce new files, parts of files, combinations of files and audit files on magnetic tape, direct access devices and cards.

A major attribute of Mark IV is the ease with which it can be learned and used. Familiarity with computers and data processing is not required: managers, clerks and presidents can be taught to use the system..

Common data processing tasks are pre-coded and stored on the Mark IV library. They can be called out automatically and included in the generated object program when required. Simple structured forms facilitate communication with the System, and no programming by the user is required.

Major corporations throughout the country have contracted for use of the Mark IV, which has been under development since early 1966, and it is also going into overseas use.

TRANSATLANTIC RATES TO BE REDUCED?

NEW YORK, Aug. 31 – ITT World Communications, Inc. today filed a new tariff which would provide a reduction of $1,500 a month in voice grade communications channels between New York and a number of European points.

ITT Worldcom, subsidiary of International Telephone and Telegraph Corporation, proposed a rate of $6,500 a month for leased channels between New York and England, France, Spain and Germany, effective October 1, 1967. This represents a reduction of $1,500 a month from existing rates for these communications facilities.

Expanded availability of the satellites and increased usage of alternate voice/data systems made the reduction possible. As a result of the new rates, more companies will have access to advanced communications techniques.

New Univac Plant

ST. PAUL, MINN., Sept. 6 – More than 800 personnel of Sperry Rand's UNIVAC Division will move this month into the latest UNIVAC facility in the Twin Cities area.

It is a new, two-story, 214,000-square-foot building in Eagan Township of Dakota County, south of St. Paul.

Construction, which began last August, was completed this week. Occupancy will continue throughout September.

EAI 580,6200 TO BE SHOWN AT NEC

WEST LONG BRANCH, N.J. – Electronic Associates, Inc. has announced that two of its newest products – the EAI 580 Analog/Hybrid Computing System and the Series 6200 Digital Measuring System – have been accepted as subjects for new product seminars at the 23rd annual National Electronics Conference to be held Oct. 23-25 in Chicago's International Amphitheater.

The 6200 seminar will be held at 4 p.m., Monday, Oct. 23 and the discussion on the 580 is scheduled for 11:30 a.m., Wednesday, Oct. 25. Both seminars will be held in conference room "H" in the Amphitheater. The 580 and the 6200 will be displayed in booths 333 and 337 in the NEC exhibit area.

The seminars are regular features of the conference, which is promoted as the nation's leading forum on electronic research, development, application and education.

The EAI 580 system is a general-purpose, 10-volt, solid-state computer – the first desk-top system designed to provide full analog capability and provisions for expansion into a hybrid computer.

The Series 6200 is a portable instrument capable of functioning as a digital voltmeter, digital frequency, period or time interval counter, or as an AC convertef.

The data systems division of the American Railroads met in Houston on September 11, through 13 to discuss implications of recent data processing developments. One of the exhibits, shown above, showed a train running on a track while being monitored by an 18,000. The demonstration was designed to show railroad commuters how they can use computers to control the movement of traffic through their freightyards.

Independent Tape-Unit Vendor Offers 'Prime Service' Responsibility

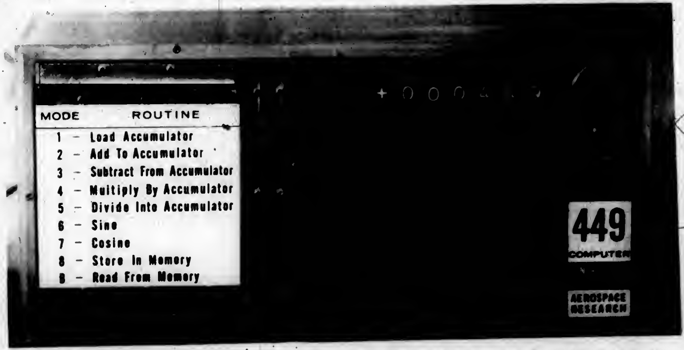
M.A.I. will offer "prime service" responsibility to users of their new tape units. The firm says these units can replace the IBM 729 and 2401. "If a customer has a read-or-write problem, we want him to call us before he calls IBM. Joint responsibility between two service organizations in a single installation has been a practical reality for some time. So we don't expect any problems.

With these words, an MAI spokesman put his service force on the line in the campaign to sell non-IBM tape units to IBM users. The service force consists of over a thousand men in over a hundred U.S. cities and a number of countries.

Queried about the servicing problems, Mr. Friedman said that it was a comparatively easy matter from an engineering standpoint to determine whether a fault lay in the tape unit or not. The tape unit-to-controller interface, he said, is an easy one. It is much easier than, for instance, the interface between the controller and the computer itself. We feel that a user can simply plug in one of our units and carry working just as before."

The tape units are being prepared, by Potter Instruments Company of Plainview, New York. Specifications and details will be published in COMPUTERWORLD in a future issue.

This Is The Size...The World's Smallest Computer!



The Control Data 449 computer system claims to be the world's smallest electronic computer. Measuring 4" x 4" x 9", the outer case contains a battery as well as the computer itself. (That's only a 4" cube.)

BULLETIN BOARD

SWAP 13 – (For CDC Small & Medium Scale Computer Users) will be held on October 23-25, 1967 at Somerset Hotel, 400 Commonwealth Avenue, Boston, Massachusetts. For further information please contact: Mr. George Catuna, Conference Registration Chairman, c/o MIT Lincoln Labs, P.O. Box 73, Lexington, Massachusetts, 02173 – (617) 692-4765.

SAM ALEXANDER HONORED BY AFIPS

NEW YORK, N.Y., Sept. 6 – Samuel Nathan Alexander, senior Research Fellow of the Netional Bureau of Standerds, has received the annual Harry Goode Memorial Award in recognition of his outstanding contributions to computer technology and government applications over the past 21 years.

The award was presented to Alexander by the American Federation of Informetion Processing Societies (AFIPS), representing over 40,000 computer professiohals through their member organizations in the U.S.

Highlights of Semuel Alexander's career are:

(1) procured the first three UNIVAC's ever produced for use in the government.

(2) directed the design and manufacture of the National Board of Standards' SEAC, the first stored-program electronic computer to become operational in this country.

(3) directed the development and construction of DYSEAC, the first transportable computer for the Department of Defense.

(4) first head of the Nationel Bureau of Standards Date Processing Systems Division.

Mr. Alexander is the sixth recipient of the Harry Goode Memorial Award, previous recipients having been Dr. Howard Aiken in 1964, Dr. Konrad Zuse and Dr. George Stibitz co-awardess in 1965 and J. Presper Eckert end Dr. John Meuchly as co-awardess in 1966.

HUNTSVILLE, ALABAMA, Sept. 12 – Computer Applications Incorporated, the computer programming and consulting company, has opened an office at Huntsville, Alabama, it was announced today by John A. DeVries, president.

The new office, at the State Netional Benk Building, 200 West Court Square, Huntsville, will be part of the Systems Engineering Division of the company's Northeast Region, headquartered in New York City.

RO-MAC ASSOCIATES CONTINUES EXPANSION

September 7 – Ro-Mac & Associetes, personnel consultants specializing in data processing and financial personnel, with present offices in Chestnut Hill, Mass. and Portland, Maine, have announced the opening of two additional offices at Cranston, R.I. and West Hartford, Conn. Mr. Chris Smith, former IBM account representative, will direct the West Hartford office, while Mr. Albert Dunkel, former executive with Barrows Industries, will manage the Cranston office.

LOS ANGELES, Sept. 12 – Los Angeles County today entered into an agreement with IBM for the purchase of 33,000 Votomatic punch card vote recorders and 7,000 demonstrator units et a total cost of %5.6 million.

This is the largest order ever for an electric voting system.

CALL FOR PAPERS

The 1968 Spring Joint Computer Conference will be held in Convention Hall, Atlantic City, New Jersey from Tuesday through Thursday, April 30th to Mey 2nd.

Papers are asked on topics of current interest as computers utilities, time sharing, the man-machine interface, computers and communications, computers and control, design autometion, but need not be limited to them. Survey, tutorial and interdisciplinary papers are also welcome.

For details contact Professor T.R. Bashkow, Technical Program Committee Chairman, 1968 SJCC, Department of Electrical Engineering, 1312 S.W. Mudd, Columbia University, New York, New York 10026.

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Credit Card Accounting Software Offered By Software Resources

LOS ANGELES, Sept. 11 – The availability of e Credit Card Accounting System for the IBM System/360 was announced today by Software Resources Corporation. The system, which is presently operational, is intended for use by banks and other credit card operations. It contains many special feetures which provide an unusual degree of flexibility, the company stated.

The system provides an optional online inquiry file thet can be used for immediate account status inquiry. This file is recreated each day for all active accounts and can be memo posted with transaction and euthorization activity.

The daily journal can optionally reflect accumulated week-to-date activity, statement-to-date activity, or a full trial balance of the complete file.

Customer statements may be printed or printed-and-punched on 51-column automatic re-entry cards. Statement format can be either country club or detailed.

The system will run on any IBM System/360 with a 32K byte memory and either three disk drives or four tapes.

Calif DP School Bought For Cash

Universal Data Processing Corporation (OTC), Los Angeles, largest independent commercial data processing firm in Southern California, has acquired for cash the assets of International Tabulating Institute, oldest school in Southern California devoting its entire curriculum to data processing.

Founded in 1957, ITI has graduated approximately 20,000 students and is estimated to have played a part in training 25 per cent of all persons in data processing management in Southern California. The school, with facilities in Los Angeles and Sherman Oaks, will be operated as a wholly-owned subsidiary with J. Sheldon Olins continuing as genetal manager.

UDP plans to expand the number of schools geographically and in addition will immediately begin adding courses, particularly in the management field. Planned are courses providing for in-plant training of technicians, to provide company executives with a working knowledge of data processing and techniques for evaloating its use in everyday business applications.

ITI students, who learn by doing, will have access to the latest equipment in UDP's Los Angeles Data Center, including e new IBM 360 "third generation" computer and CDC Optical Scanner.

Universal Data Systems, Inc., the company's software subsidiary, many of whose staff have university teaching experience in date processing, will act as consultants in keeping the school's curriculum attuned to the changing needs of industry and science.

Biggest problem of the data processing industry is lack of trained personnel, according to William C. Clauer, president of UDP. More than 100 new data processing facilities open in Los Angeles each year, creating thousands of new jobs.

Southern California and the nation have fallen behind in educating machine operators, program coders and systems analysts, Clauer said. He estimated the number of unfilled jobs in these classifications nationally at 50,000, 12,000 of them in Southern California.

RANDOLPH COMPUTER LISTED ON AMERICAN

NEW YORK, Sept. 6 – The American Stock Exchange todey admitted the common shares of Randolph Computer Corporation to listings and dealings. The New York firm leases computers and related equipment.

Under the ticker symbol RCR, trading opened on 700 shares at 39 1/8.

As of May 31, Randolph Computer Corporation consisted of 91 separate computer systems having an original cost of about $44.9 million. Through acquisitions of companies in Portland and Eugene, Oregon, the company now is also engaged in the data processing service business.

For the five months ended May 31, the company reported net income of $543,276, against $36,374 in a similar period in 1966.

New CDC Graphic Unit

CONTINUED FROM PAGE 1

are based on a new concept of system control and equipment interfaces provided through use of mecro-programming techniques and running under the 1700 Operating System. The resulting real-time mode, unified with the off-line displey feeture, provides a powerful operational technique for the handling of massive graphic informetion.

When used with the CDC 1700 Computer, the Digigraphics System is obtained by installing e 274 Digigraphics Console; a 1744 Digigraphics Controller; the M007 Digigraphics Package; and additional core and disk-pack storage on the 1700 Computer System with the E006 Operating System.

NEW RENTAL PLAN

CONTINUED FROM PAGE 1

lect. Of course, if we feel that they are really trying to stack the deek against us, then we will neturally negotiate. But in general, it's up to them." Asked about customers' reaction to the new concept, he said that they were enthusiastic. However, in keeping with company policy, no names could be revealed, so COMPUTERWORLD was unable to check out the reception.

Standard Computers has recently started marketing a second emulator for the I.C.-6000. This handles 7044 programs, as well as the 7094 programs which were originally handled. Preseot day users of the I.C.-6000, can have the new emulator added to their present system. The basis is that is handles any number of programs having, as the brochures put it, 'e computer within the computer' which translates the instructions of one particular machine, into the working operations of the I.C.-6000. This allows not merely hardware emulation, but also the use of the software of the original machine to be used. At present the I.C.-6000 is running programs using the IBM IBSYS program as its operating monitor. There are a few operating changes as far as the operator is concerned but otherwise the program stays as-is.

The design of the system does allow for completely different systems to be run, although et present only the closely related 7044 and 7094 emulators are available. COMPUTERWORLD understands that work is proceeding on very different emulators which will run on the same machine.

Computer Aided Instruction Planned For Army

The Human Resources Research Office of George Washington University has launched e five-year advanced development project to provide the Army with en efficient, effective and economical computer-administered instruction system.

Budgeted at $4.3 millioo, the project, called IMPACT, has three major objectives:

1. To produce e prototype computer-administered instruction (CAI) system which the Army can put into operation.

2. To produce several CAI programs of instruction dealing with differeot kinds of subject metter.

3. To produce a decision model of the instructional process. The model is to be sufficiently explicit and detailed to be programmed into a computer which can then execute instructional decisions, giving each student a tailor-made program.

In CAI, the computer presents subject matter, asks questions, and provides answers and other information to students et individual stations. The student responds by means of a typewriter keyboard or with a pen thet "writes" with light.

The computer uses the student's responses to lead him through the curriculum at his own rate. It must have built-in patterns ol the best weys to teach particular kinds of subject metter to particular kinds of students. Development of e decision model which will do these things is one of the key objectives on IMPACT.

The IMPACT research team of computer hardware and software experts, instructional programmers, applied methematicians and behaviorial scientists will be headed by Dr. Robert J. Seidel, an experimental psychologist in the Human Resources Research Office's Division No. 1 (Systems Operations). He explains that the program representing the decision model can be described as artificial intelligence that simulates an "ideal" instructor's decisions.

The project will be undertaken in four successive cycles, to provide the Army with a CAI system with the least possible deley.

PDP-8/S Systems Now "Shelf-Stock"

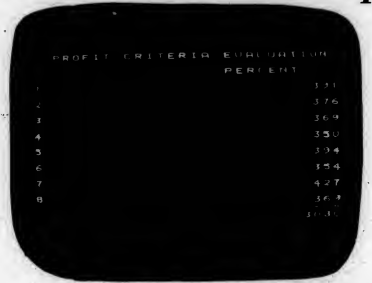
MAYNARD, MASS. – Digital Equipment Corporation has announced "Off-the-Shelf" delivery for small quantity orders of its PDP-8/S computer.

The new delivery schedule marks the first time a full scale computer has ever been mede available from stock. In addition, Digital has put at least one PDP-8/S in each of its sales offices to meet the needs of e customer who may require instantaneous delivery.

William Landis, Marketing Manager for the PDP-8/S said, "The decision to make the PDP-8/S availeble "Off-the-Shelf" is a direct result of the increasing use of small general purpose computers as internal components in a growing number of instruments and systems. DEC is the world's largest manufacturer of small computers for these applications."

The PDP-8/S is a full scale, general-purpose, core memory digital computer. The basic system features 4,096 words of 12-bit expandable core memory; a full set of instructions; flexible input-output control; a comprehensive software package, including FORTRAN; and an ASR-33 teletyp

Some Color Applications...

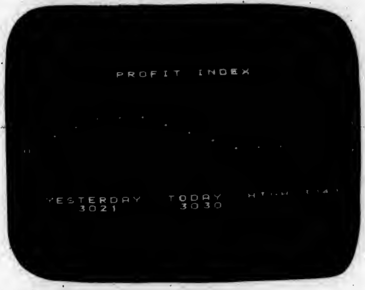


```
PROFIT CRITERIA EVALUATION
                  PERCENT
                        331
1                       376
2                       369
3                       350
4                       394
5                       354
6                       427
7                       369
8                      3030
```

COLOR FOR EMPHASIS

A very common present-day use of color is not to give additional information but to drive it home to human brains. In the Chart "Profit Criteria Evaluation" on the right of the display, this technique of highlighting the information is used to bring out the importance of differences in profit. Here the profit of lines 1 through 8 is actually shown *twice* on the display-quite explicitly (in the percent column the actual numbers are shown though the signs plus and minus are omitted.) In the chart on the left of the display, the same numbers are interpreted graphically to bring out their importance.

Our Second diagram shows a second possible use of color on a display. Here, the color is used to CLARIFY the image. The Profit index of a series of items has plotted in the range of +4 to -4 to show the comparative performance, yesterday and today. Lines representing +4, 0, and -4 are shown in the display. These three lines are, of course, parallel and a quick look at the display could confuse one with another. This would of course lead to erroneous conclusions. So, the zero line, being the center one, is done with white, while the two outside ones plus four and minus four are done in blue.

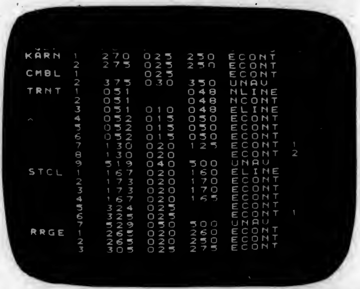


```
          PROFIT INDEX



YESTERDAY     TODAY     [illegible]
  3021         3030
```

CLARITY THROUGH COLOR



```
KARN  1   270  025  250  ECONT
      2   275  025  250  ECONT
CMBL  1        025       ECONT
      2   375  030  350  UNAU
TRNT  1   051       048  NLINE
      2   051       048  NCONT
      3   051  010  048  ELINE
      4   052  015  050  ECONT
      5   052  015  050  ECONT
      6   052  015  050  ECONT
      7   130  020  125  ECONT  1
      8   130  020       ECONT  2
      9   519  040  500  UNAU
STCL  1   167  020  160  ELINE
      2   173  020  170  ECONT
      3   173  020  170  ECONT
      4   167  020  165  ECONT
      5   324  025       ECONT
      6   325  025       ECONT  1
      7   329  030  500  UNAU
RRGE  1   265  020  260  ECONT
      2   265  020  250  ECONT
      3   305  025  275  ECONT
```

COLOR ADDS INFORMATION

The third and perhaps most interesting use of color display is to provide information which is not usually on the surface of the display at all. Here we are providing non-redundant information. Typically, this will occur when a particular number is outside the bounds of some criteria which can be simple or complex. A banking display, for instance, might use it to indicate that certain balances are outside policy criteria- in short, poor credit risks. In the figure on the right you can see the figures 275 and 250 and emphasized on the third line from the top. The emphasis is quite private, and the reason for it need not be displayed, thus providing the additional factor that a public display or semi-public display can provide confidential information.

In combination with an input device, this style of display is particularly useful as the criteria can be changed from the input so that groups of cases can be examined in a number of ways.

For Some Possible Problems See Page 6

Three Possible Problems With Color Displays

Nothing really exists which has only good aspects. Color is no exception. It has a number of problems-real and imaginary. The following are not really complete but give an indication of some of the major areas.

GLAMOUR

Problem 1. Glamour: Color is glamourous. People do like it. And this brings us to the problem. To start with you will have some people trying to put color in where there is no real reason to do it. This should be examined carefully. One, to see if there is a genuine reason to do it-improved performance, quicker reactions, etc. And then to put the REAL REASON as the justification. Too often the glamour-selected color device has an improper justification attached to it.

COLORBLINDNESS

Some people are color blind. There are not many, but they can be in critical positions. In the early days of Operations Research it became commonplace, for O. R. men to test out the color vision of the top management by somewhat devious means. Otherwise, they found that their best charts and their most colorful display were being wasted.

Color blindness does not really hurt in areas where the information passes on by the color is actually redundant, and used for clarification and emphasis. Most colorblind people can actually differentiate between the shades of gray that they see. Also advantage can be taken of the fact that the standard color blindness, red-green confusion, can be avoided when pairing colors. This reduces the incidence of color-blind effects greatly.

However, in cases where color blindness may occur and where the color does contain information, then some redundant characters must be added which indicate the color. Otherwise, perhaps, use more than one display i.e., let a color blind person have the facility to have special routines which will bring up particular colors at times controlled from the console. Alternatively abandon the whole color concept.

COMPATIBILITY

Problem 3. Compatibility: The problem of color-displays is, of course, unable to be removed from the whole field of the central computer. In particular, the situation of the extra two-bits needed somewhere to define what color a particular character is in, has to be handled. If this cannot be done simply, if for instance we have to re-write operating systems-this would clearly hurt the potentiality of color displays.

In fact in the present situation, there are color displays presently working in connection with two standard computers, and their operating systems. The computers are the G.E. 235 and the IBM 360/40. The G.E. 235 thinks that the color display is a teletype. Using the various control characters as a escape characters, this allows the programmer to get his color in. This approach seems to be perfectly acceptable on almost any system, because almost any system can hook on to a teletype!

The 360/40 is not being used habitually with the color displays. It has however been so used, and the operations manager see no reason why there should be any difficulty with the software. He is presently using partitioned DOS, and BTAM routines to control the displays.

The situation of more senior languages - Fortram, Cobol, PL1 has not yet been defined. BTAM is at assembly level language, and is perhaps one of the simpler problems. However, the whole of the operations of the development of these displays has been shared between the PHILCO-FORD operation in Houston, Texas, trying to become the internal supplier to the main Ford operation in Detroit. The Detroit area has been quite insistant that it is not about to start changing any of its software to help the displays - and that the displays had better be compatible. The Ford equipment included Honeywell, RCA and IBM equipment so that general level compatibility seems to be potentially probable.

In short, while the situation at this point is not clear, compatibility does not appear to be a major problem. The handling of the color will probably be done by the escape characters using standard ascii-codes or alternatively made-up teleprinter characters.

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Babies Hearing Is Tested Before She Can Speak

A human - interest story! Which shows a side of computer application which we often do not see.

* * *

STANFORD — Aided by computers, Stanford University medical researchers can now measure the slightest hearing loss in the youngest infants.

The disclosure was made by Dr. F. Blair Simmons, associate professor and head of the Division of Otolaryngology, as he described how a hearing test via a computer helped in the adoption of a six-month-old infant by a Redwood City, Calif. couple.

Mr. and Mrs. John P. Watney were anxious to adopt a baby named Jacqueline. But a serious question about the baby's hearing ability was raised casting a shadow on their plans.

"The usual hearing tests were inconclusive, as is often the case with young infants," related Dr. Simmons. "Until recently, the prospective parents, the adoption agency, and the physicians simply had to wait until a baby grew older before a health report, required before any adoption, could be completed."

Jacqueline was brought to Stanford's Ear, Nose and Throat Clinic one day and slept through her test period. Dr. Simmons said within an hour it was established that her hearing acuity was within normal limits, a happy ending for all concerned.

The new technique, called EEG audiometry, uses information gained from picking up the brain's electrical responses to sound, Dr. Simmons explained. With the baby mildly sedated and asleep, EEG-type electrodes are pasted on the infant's scalp to monitor brain electrical activity before, during and after the test is given.

Although use of the EEG (electroencephalograph) for hearing tests dates back more than 35 years, the technique has seldom been employed in infants because their electrical responses to sound are indistinguishable from the random brain noise.

It is here where the computer goes to work. In a soundproof room, Dr. Simmons, Dr. F. Mark Rafaty, a resident in otolaryngology and one of the chief organizers of the project, and their associates take repeated samplings of the patient's brain electrical activity under conditions of absolute calm and also under auditory stimulation provided by a series of clicks of very low intensity fed through a loudspeaker.

"During this period," said Dr. Simmons, "the memory of the computer stores the auditory signals presented to it, remembering and displaying mathematically the sum of voltages in sequence. The unwanted background noise, being random in occurrence is thus cancelled out while the evoked responses, occurring precisely time-locked to the delivery of stimulus, are exaggerated."

Because the technique requires no verbal involvement, it can be used to test hearing loss in brain-damaged or mentally retarded children, stroke victims, and even in persons who deliberately try to fake a hearing loss, he said.

A research tool for many years, the technique has only recently been applied to clinical problems, Dr. Simmons said.

The work is supported by grants from the National Institutes of Health.

Thinking Of Starting Your Own Business?

Personal Page

Our Front Page today covers the present situation of CAELUS Memories. Here is a case of a firm which may - or which may not - be a success. How are they handling the problems of trying to start quite a big concern from scratch? If you are thinking of starting your own firm the following interviews may interest you.

First of all ... here is Phillipe Ysconelli, Founder-President of Caelus, answering some questions about his firm.

Q. Making Disk-Packs cannot be a simple operation, and your new building with its clean-rooms, special air-conditioning etc. - must have cost someone quite a lot of money.

How are you financing yourselves?

A. We presently have $2,000,000 capital. Part of this was raised by the founders, and a further 1.8 million was raised this June by the sale of convertible notes to Electronic Memories Inc. These notes could eventually give two-thirds of the issued stock to EMI. Our building has been financed on a lease-back basis, and so has not involved us in any use of capital.

Q. How about the technical knowledge? There is not too much of that around the country. Where have you got your technical data from?

A. Our technical staff came from IBM, either directly or indirectly. William Benz, manufacturing vice president was with them for 10 years, and served as a manufacturing advisory consultant; Sung Pal Chur, VP for research and development and William Sousa plant manager have both also spent 10 years in the technology. And, as regarding the things that make packs good - well three members of the staff have spent their time with IBM tracking down the causes of field failures of disk packs. IBM has supplied us licenses for parts of the technology. They have been very co-operative in this matter.

Q. How about your sales force?

A. Thomas Scholten, our national sales manager, and myself are presently going around the country interviewing, and making initial staffing moves. We will be opening up throughout the country in the major cities, and we seem to have no difficulty in getting the people we want for the positions.

Q. How about field support?

A. Selling disk-packs involves us in little support problems. We will have a field failure analysis team, which will go in whenever necessary, and will advise the customer as to whether a failure is result of some flaw in our packs, or in the drives themselves. Much of this work can be done in our laboratories which is convenient. In fact, we feel that the support problems for disk packs are less than those for magnetic tape.

Q. What about pricing?

A. We will shelter under IBMs umbrella. We do not see any major changes in pricing of disk packs during the present shortage, which we anticipate carrying on for some time yet.

... and here, also talking to Computerworld is Tom Wiley, Treasurer of Electronic Memories Inc., who played such an important role in launching Caelus.

Q. Why did you finance Caelus?

A. Well, we are in the core memory business, and we naturally kept a watch on other areas. The disk-pack market is a defined market, which we feel has lots of potential, and we thought that it was worth all the time, money and effort which we have put in.

Q. Electronic Memories is a growing firm - but 1.8 million seems a little large investment to make out of your own capital. How did you finance Caelus?

A. I agree - it would have been too much for us to put up out of our own resources. We had a $2.5 million offer last June to raise the necessary funds.

Q. How do you feel about it now?

A. We are very happy to date - but it is still a speculative venture. It will be a speculative venture until the first production disks run off the production lines. And that is not expected to happen before December.

So, there you have it. That is how one man is starting his own business. Perhaps there is something there to interest you.

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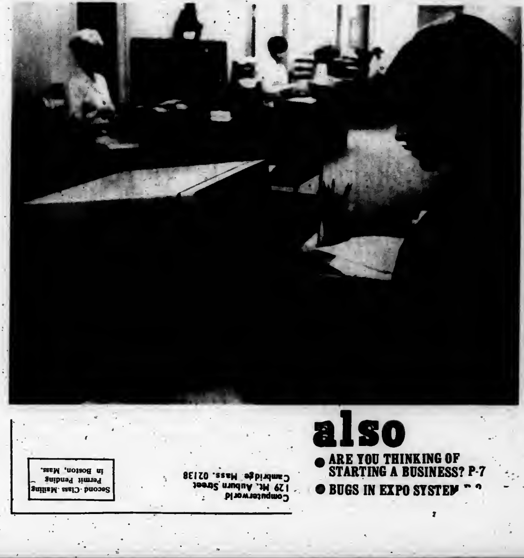

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